CLAIM AMENDMENTS

1. (currently amended) A method for cultivating human or animal cells, one culture each of cells of at least one specific type being established in a defined environment and the cell cultures being supplied with assigned, liquid nutrient media, growth factors, and gases which comprises the steps of:

a) establishing at least one cell culture inside at least one cell culture chamber (20) of a cell culture system (30);

b) starting a flow of freely selectable, defined, liquid media in the at least one cell culture chamber (20) in order to ensure a continuous supply for the at least one cell culture;

c) starting a flow of different gases with freely selectable concentrations into the at least one cell culture chamber (20) in order to ensure a constant, continuous gassing of the at least one cell culture;

d) heating the at least one cell culture chamber (20) in a regulated or controlled manner so as to ensure a constant temperature there over the duration of an experiment;

e) permanently microscopically observing the at least one cell culture inside the at least one cell culture chamber (20), without samples of the cell culture being taken over the duration of an experiment, wherein a camera with a microscope attachment on a displaceable table moves past the cell culture chambers (12)

while programming on software movement positions of the camera; and

f) permanently measuring [[all]] cell culture parameters <u>selected from the group consisting of pH values, lactate values and electric potential</u> relevant to treating inflammation, cancer, cardiovascular disease, AIDS, relevant to programmed cell death, or relevant to blood coagulation, by means of suitable sensors integrated in the at least one cell culture chamber (20).

2. (previously presented) The method according to claim 1, characterized in that a given number of cell cultures is established inside accordingly assigned cell culture chambers (20), these cell culture chambers being connected in series.

3. (previously presented) The method according to claim 1, characterized in that a given number of cell cultures is established inside accordingly assigned cell culture chambers (20), these cell culture chambers being connected in parallel.

4. (previously presented) The method according to claim 1, characterized in that the type of liquid media and/or the flow directions thereof and/or the distribution thereof and/or the flow volumes can be varied over the duration of an experiment.

5. (previously presented) The method according to claim 1, characterized in that in the case of cell culture chambers connected in series, the liquid media are continuously passed on from cell culture chamber to cell culture chamber.

6. (previously presented) The method according to claim 1, characterized in that the type of gases and/or the flow directions thereof and/or the distribution thereof and/or the gassing concentrations are varied over the duration of an experiment.

7. (previously presented) The method according to claim 2, characterized in that in the case of cell culture chambers (20) connected in series the gases are continuously passed on from cell culture chamber to cell culture chamber.

8. (previously presented) The method according to claim 1, characterized in that the temperature prevailing in the at least one cell culture within the at least one cell culture chamber (20) is measured permanently and input as an actual temperature value into a corresponding temperature adjusting circuit and/or control circuit thus enabling a corresponding adjustment and/or control of the heating of the cell culture chamber.

9. (previously presented) The method according to claim 1, characterized by the fact that one cell culture of a different type each is established on both sides of a gas-permeable membrane within at least one cell culture chamber (20) for the purpose of a direct co-cultivation of both cell cultures.

10. (previously presented) The method according to claim 9, characterized by starting a first flow of media to one side of the membrane, namely, the apical side with the first cell culture, and of a second flow of media that differs from the first flow of media to the other side of the membrane, namely, the basolateral side, with the second cell culture.

11. (previously presented) The method according to claim 1, characterized by application of a method for indirect co-cultivation, different biological systems being connected in series in corresponding cell culture chambers (20).

12. (previously presented) The method according to claim 1, characterized by a video-supported microscopic observation of the at least one cell culture in the at least one cell culture chamber (20).

13. (previously presented) Method according to claim 1, characterized in that all data that are obtained by permanent microscopic observation of the at least one cell culture within the at least one cell culture chamber (20) and/or permanent measuring of the relevant cell culture parameters defined in step (f) and/or permanent measuring of the temperature in the at least one cell culture inside the at least one cell culture chamber (20), are transmitted to a computer-controlled monitoring and control system (G) for further processing there.

14. (previously presented) The method according to claim 13, characterized in that the permanent measuring of the relevant cell culture parameters is carried out by means of a software-aided measuring method.

15. (previously presented) The method according to claim 1, wherein in step (e) during the permanent microscopic observation the at least one cell culture inside the at least one cell culture chamber (20), wherein the camera with a microscopic attachment on a displaceable table moves past the cell culture chamber (12) while programming on computer software, movement positions of the camera, further comprising the steps of determining cell contours during movement of the camera, storing the determined cell contours on the computer software, and recognizing those stored determined cell

contours when the camera again moves past the cell culture chamber later on during the observation.

16. (Canceled)